

1 Q. **Reference: 16.**

2 Does Hydro have any knowledge of any oil refineries which have backup generation
3 in place, and if so, please specify.

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6 A. In an effort to determine the practices in other jurisdictions with respect to oil
7 refinery supply and backup power provisions, Hydro developed a questionnaire for
8 other Canadian Electrical Association (CEA) members. Following is a table of the
9 questions and responses received in March, 2013 from the three utilities that
10 responded.

CEA Questionnaire

CEA Poll Questions and Results	
Q1. Is the Oil Refinery connected to your transmission network by a single transmission line or two (or more) parallel lines? (i.e. single radial circuit or multi circuit)	Member 1. "Multi Circuit." Member 2. "One of our subsidiary companies supplies an oil refinery with two 144 kV lines which makes it convenient for line maintenance. We also supply many oil and gas extraction/processing plants, some with a single line and some with 2 lines. The ones with a single line usually have their own generation at site." Member 3. "Hydro One has refineries on single transmission circuit with distribution back-up (i.e. Dx connected to provide a small amount of back-up power). We also have refineries connected via multiple HV circuits."
Q2. What, if anything, has your Utility done to improve the reliability of supply to the Oil Refinery? i.e., special protection systems on the transmission lines (eg., lightning arresters), special operating procedures, etc. If applicable, please provide additional detail.	Member 1. "Nothing outside of the norm. Sites are equipped with Lightning Arrestors and Lightning Arrestor monitors. Are also targeting them for the installation of Hydrans to monitor transformer oil quality." Member 2. "We don't do anything special. If the line is 240 kV, we use A and B protection, each consisting of distance relays with teleprotection. On 144 kV lines, 2 distance relays are used without teleprotection, except in special cases of short lines where teleprotection and line differential and/or distance relays are used." Member 3. "We install modern protection systems and coordinate P&C maintenance with season fuel refining change-overs for single circuit supply."
Q3. Does the Oil Refinery have a backup or alternate power supply in the event of loss of supply from the transmission network?	Member 1. "No, not aside from the two transmission feeds. There exists an auto-transfer scheme at one of the sites to transfer all load to one transformer in the event of an outage to one of the transmission lines." Member 2. "See above." Member 3. "We have oil refinery with Dx connected back-up."
Q4. If you answered yes to Q3.) above - What type of the backup power supply is utilized?	i. Local generation at the Refinery (eg., diesel or gas turbine) ii. Supply from another Utility (eg., emergency supply via distribution utility) iii. Other (please provide details on type) Member 1. N/A Member 2. "Usually, local generation." Member 3. "Distribution supply at reduced capacity."
Q5. What are your Utility's best practices for transmission supply to Oil Refineries? Are there any special requirements?	Member 1. "Have substation operating procedures for each site addressing any unique scenarios or special considerations and how to respond accordingly." Member 2. "None that I am aware of." Member 3. "We would prefer double circuit supply from the HV system to feed two or more independent HV refinery transformers. Some refineries seem to choose a big burn off of fuel when their primary single circuit supply is interrupted."

1 It should be noted that, in general, Hydro's supply to NARL meets or exceeds that of

2 the three respondents in that there is a double circuit supply, independent dual

3 transformers with a transfer arrangement and 'A' and 'B' protection schemes. It

4 should also be noted that two of the respondents indicated that their refinery

5 customers have a backup supply via local generation or a distribution feeder.